VDOT Virginia Department of Transportation

BETHEL ACADEMY SUBDIVISION

ASSESSMENT OF CURRENT CONDITIONS AND NEEDED IMPROVEMENTS FOR ACCEPTANCE INTO STATE MAINTENANCE PROGRAM

FAUQUIER COUNTY
CENTER MAGISTERIAL DISTRICT

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BETHEL ACADEMY SUBDIVISION

HISTORY:

Bethel Academy Subdivision is located north of the Town of Warrenton off Airlie Road (Route 605) and Blandtyre Road (Route 628) in the Center Magisterial District. This subdivision was established in 1959 and the roads have been privately owned and maintained since its inception by the owner (Mr. Alexander Yurgaitis, Jr.). In recent years Fauquier County has approached the Virginia Department of Transportation (VDOT) to review the existing roads and to provide information for improvements needed to bring these roads up to current VDOT standards and the costs associated with these improvements. On August 10, 2006 the Fauquier County Board of Supervisors passed a resolution to work with VDOT to have the roads within the Bethel Academy Subdivision brought into the Department's Secondary Road System.

The Bethel Academy Subdivision consists of eight (8) individual roads. The names listed below are the names currently on the street name signs. The road names in parenthesis are the names shown on the As-built plans dated June 4, 1986.

- West Bethel Drive
- Pavilion Street
- Cannon Drive (1st Street)
- Academy Road
- Cadet Road (3rd Street)
- Artillery Avenue (4th Street)
- Meadow Street
- East Bethel Drive

Three of the roads (Pavilion Street, Cadet Road, and Artillery Avenue) access Airlie Road (Route 605) and one road (Academy Road) accesses Blandtyre Road (Route 628). VDOT has a copy of the As-built road plans for the Bethel Academy Subdivision surveyed by Mr. Richard H. Vogel, L.S. dated June 4, 1986. This survey shows the lot numbers, road right of way width, centerline of roadways (with stationing and curve data), drainage cross pipes, and some underground utility information. No entrance locations or entrance pipes are shown.

OBJECTIVE:

The objective of this exercise is to collect data pertaining to the roads within the Bethel Academy Subdivision from field visits and other information such as the As-built plans to determine the condition of the roads, necessary right of way and easements, utility locations and drainage system to help the Department determine necessary improvements needed to bring these roads into the Department's maintenance system and the costs associated with making these improvements. The recommendations are to be based on the Department's 2005 Subdivision Street Requirements manual and 2005 Subdivision Street Design Guide.

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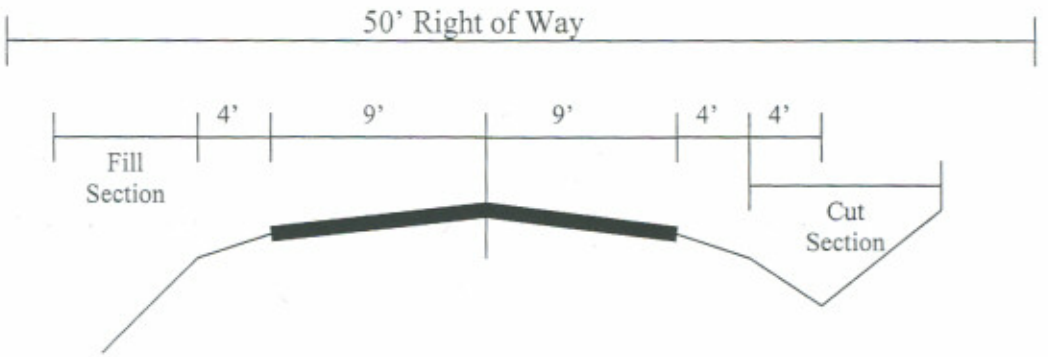
RIGHT OF WAY:

In accordance with the As-built plans certified by Mr. Richard H. Vogel, L.S., all roads within the subdivision have been constructed within an established fifty (50) foot right of way. All roadway cross pipes have been constructed within the defined right of way with certain pipes having established drainage easements beyond the right of way line at the outfall end of the pipe. These easements appear to have been established for outfalls that have a live stream or a defined channel.

ROADWAY TYPICAL SECTION AND GEOMETRICS:

In accordance with the Department's 2005 Subdivision Street Design Guide (of the Road Design Manual – Appendix B), the minimum pavement width is 18-ft. (2 – nine foot travel lanes) with four (4) foot gravel shoulders and 3:1 front slope of ditch section for a width of four (4) feet (depth of ditch to be approximately 16" from back of shoulder to bottom of ditch). The back slope of the ditch section shall not be steeper than 2:1.

TYPICAL SECTION



Travel lane slopes are to be ¼" : 1' and shoulder slopes are to be 5/8" : 1' fall away from the centerline. The cut and fill sections are interchangeable based on the existing terrain.

ENTRANCES:

Entrances are to be replaced using the private entrance standard (PE-1) as the minimum standard from Department's Road and Bridge standards. This standard allows the ditches to be constructed to achieve a minimum cover of 9" over the entrance pipe (if required). Most of the entrances having an entrance pipe has either deteriorated and requires replacement or has been crushed and need to be replaced. Because of the necessity to have proper roadside ditches, many of the existing entrance pipes will need to be replaced to maintain proper drainage. Due to the age and condition of these pipes it is advisable to replace the entrance pipes. In making these entrance improvements, the entrances are to be replaced in kind (asphalt, concrete, or gravel).

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ROADWAY (CROSS) DRAINAGE PIPES:

All pipes constructed under the existing roads are corrugated metal pipes. The pipes lack sufficient cover (distance from top of pipe to top of pavement) and the flow line of the pipes associated with live streams have, in many cases, deteriorated to the point the pipes no longer have a bottom. All cross pipes should be replaced with concrete pipe of equivalent size unless otherwise noted. Cover over these pipes should be a minimum of one (1) foot.

Academy Road

- Sta. 1+80 – 18" pipe will require drainage easement from the outfall to Route 605.
- Sta. 15+00 – 15" pipe will require extension of outfall drainage easement.

Cadet Road (3rd Street)

- Sta. 8+75 – 48" X 33" Arch pipe needs to be replaced with triple line of 49" X 32" elliptical concrete pipe in order to meet 10 year design frequency requirements.
- Sta. 8+70 - Extend 20' drainage easement to Artillery Road (4th Street).

Artillery Road (4th Street)

- Sta. 0+15 – Replace existing 18" CMP with 24" concrete pipe.
- Sta. 12+50 - 48" X 33" Arch pipe needs to be replaced with triple line of 49" X 32" elliptical concrete pipe in order to meet 10 year design frequency requirements.
- Sta. 12+50 – Widen existing 10' drainage easement to 20' and extend to the limits of subdivision.

Cannon Drive (1st Street)

- Sta. 5+80 – Replace existing 15" CMP with 18" concrete pipe and realign outfall.

Drainage comments related to re-establishing roadway ditches adjacent to the roads have been described in the section labeled ***Roadway Typical Section and Geometrics*** (pg. 3).

ENTRANCE INFORMATION:

Based on field visits to observe and collect data for this exercise there are a total of ninety-five (95) that access the roads in this subdivision. Some lots do not have access while other lots have two access points. This total of entrances does not include entrances that currently have access off of state maintained roads (Airlie Road and Blandtyre Road). Of those ninety-five entrances, seventy-seven (77) of the entrances are paved (asphalt), sixteen (16) are gravel and two (2) are concrete.

For estimating purposes, quantities of asphalt and gravel were computed for the area from the edge of the travel lane to the back of the radii for a VDOT private entrance (PE-1). This area will cover the improvements needed for entrance pipe replacements. A thickness of 1.5" was used for the asphalt for the paved entrances and 4" of gravel was used for the gravel entrances to compute the quantities. Because the two concrete

entrances can be open cut (trenched) to replace the entrance pipe, the cost associated with the concrete is minor and is included in the contingency.

UTILITY LOCATIONS:

The As-built plans identified water and electrical crossings at various locations throughout the subdivision. Since no sewer, telephone, cable or other utilities were not shown on the plans, there should be a coordinated effort by the community and county to identify all utilities within the 50-ft. street right of way for all roads that may be eligible for state maintenance. In addition to locating these utilities, the depth of the underground utilities and the height of the overhead utilities need to be determined if there are any potential conflicts with the drainage structures (pipes and ditches) and the pavement structure.

If utilities are determined to not be in conflict with the operation and maintenance of the roads, the utilities may be allowed to remain in the right of way. However, any longitudinal runs under the pavement of shoulder will not be allowed but may be relocated to back 3-ft. to 5-ft. of the right of way.

PROCEDURE FOR STREET ACCEPTANCE:

In addition to the recommended improvements related to the roadway, drainage, and utilities, the Department will require clear title of all public right of way and any related easements. The street acceptance process will be the same as a private developer with the following information being needed:

- Resolution from Fauquier County Board of Supervisors
- Clearance of utilities (quit claims)
- Posting of maintenance fees and surety bond
- Documentation stating right of way is free and clear

SIGNING AND INTERSECTION SIGHT DISTANCE

All existing road signs to be maintained by VDOT (such as stop signs) should be upgraded to meet the signing standards prior to roadway acceptance.

All intersections within the subdivision should be visited individually to determine if obstruction within the right of way are interfering with the sight distance. These objects will need to be removed prior to street acceptance.

ESTIMATED COST:

The following breakdown of costs is to improve the streets within the Bethel Academy subdivision. These estimated costs are to improve the streets (including drainage improvements). The unit costs used to develop this breakdown are based on VDOT contract unit prices for the year 2006. Construction surveying has been included to cover costs associate with re-establishing right of way lines, installation of cross pipes for the streets, and platting and needed easements. The pavement estimate includes the cost to pave all the streets and existing paved entrances within the subdivision. Work to improve the shoulders and ditches have been broken down into Shoulder Stone and Ditching. Although is work may be done concurrently, it has been shown this way based

on the calculations. The line item for drainage improvements includes the replacement of all cross pipes within the streets as well as the replacement of entrance pipes. For estimating purposes, an assumption was made to include in the cost to replace all entrance pipes with 15" corrugated metal pipe (CMP) with an average length of thirty (30) feet. A contingency of 10% has also been included to cover any "unknown" situations that may occur during the construction such as quantity overruns and utility relocations.

Construction Surveying	$25,000
Pavement (Asphalt)	$160,000
Shoulder Stone	$25,000
Ditching	$40,000
Drainage Improvements	$222,000
Contingencies (10%)	$47,200
TOTAL	**$519,200**